

Chapter 02

POLYNOMIALS

Example:

If $f(x) = (2x^3 + x^2 + bx - 6)$ leaves a remainder 36 when divided by $(x - 3)$, find the value of 'b'.

Solution:

Given, $f(x) = 2x^3 + x^2 + bx - 6 \rightarrow (1)$

$\therefore f(x)$ divided by $(x - 3)$ leaves a remainder 36.

$$\Rightarrow f(3) = 36$$

$$\Rightarrow 2(3)^3 + (3)^2 + b(3) - 6 = 36 \quad (\because \text{From (1)})$$

$$\Rightarrow 2(27) + 9 + 3b - 6 = 36$$

$$\Rightarrow 3b + 57 = 36$$

$$\Rightarrow 3b = 36 + 57 = -21$$

$$b = \frac{-21}{3}$$

$$\therefore \boxed{b = -7}$$